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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)
	09/915,332	DUPLAIX ET AL.
	Examiner	Art Unit
	Habte Mered	2616

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *25 October 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-30,50-55 and 59-69* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-30,50-55, and 59-69* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *08 November 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

A. The amendment filed on 10/25/2007 has been entered and fully considered.

B. Claims 35 and 38-41 are now cancelled. Claims 68 and 69 are newly added claims

C. Claims 1-30, 50-55, and 59-69 are pending. Claims 1, 23, and 65 are the base independent claims.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. **Claims 1-30, 50-55, and 59-69** are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsukakoshi et al (US 6, 577, 634), hereinafter referred to as Tsukakoshi, in view of Agarwal et al (US 6, 947, 963 B1), hereinafter referred to as Agarwal and Watt et al (US 7, 068, 661 B1), hereinafter referred to as Watt

Tsukakoshi discloses a router device with route calculation units and forwarding units.

3A). Regarding **claim 1**, Tsukakoshi discloses a router device with route calculation units and forwarding units. The route calculation unit has a CPU and memory and has two or more routing protocol means to handle different types of protocols. Similarly the forwarding unit has a CPU as a forwarding processor and a memory unit. The router

device's forwarding unit serves as the I/O unit and interfaces with external devices. The routing calculation unit constitutes the routing layer while the forwarding unit defines the I/O layer. The router device disclosed by Tsukakoshi is in effect a clustered router and appears to other external routers and communication terminals as a single network forwarding apparatus. **(See Column 3, Lines 62-67)**

Tsukakoshi discloses a router supporting multiple routing protocols **(See Column 3, Lines 18-20; Figure 1 element 15; Each routing calculation unit can handle two different routing protocols),** the router comprising:

a. an interface layer including a plurality of I/O controllers, each I/O controller implementing an I/O port; **(See Figure 1, element 18; Figure 4, element 18;Column 4, Lines 53-64; Each forwarding unit acts as an I/O controller determining what to transmit, re-transmit, accept and reject from the incoming and outgoing packet traffic. Each forwarding unit has to have at least one I/O interface or port to send to and receive packets from external routers like router 25 in Figure 1)**;

b. a switching layer in communication with the interface layer for selectively establishing signal pathways between I/O ports; **(See Figure 1, element 13; Figure 4, element 46; Column 4, Line 40)**

c. a routing layer in communication with the interface layer, and the routing layer including a plurality of routing protocol computing entities, each routing protocol computing entity being associated with a set of at least one routing protocol and including: **(Tsukakoshi discloses each router entity 12 in Figure 1 contains two or more routing protocol means 15 as shown in Figure 1. See Column 3, Line 19.**

Further, Tsukakoshi shows that each router entity 12 in Figure 1 can contain more than two routing protocol means 15 which can easily be verified in Figure 3 that there are three running different protocols – protocol A, B, and C. See Column 2, Lines 37-38 and Column 14, Lines 13-20.)

i. a CPU **(See element 41, Figure 4)**;

ii. a data storage medium in communication with the CPU **(See element 42, Figure 4)**;

iii. and storing program data executed by the CPU **(it is inherent for any processor designed to execute a series of procedures to store the instructions for executing the procedures in memory and in this case the program data has to be stored in the storage medium shown in Figure 4 as element 42)**;

Tsukakoshi fails to disclose causing routing protocol computing entity to effect management of one or more peering sessions with remote routing devices according to the at least one routing protocol in the set associated with routing protocol computing entity, the management of one or more peering sessions comprising maintaining in the data storage medium <u>information on a plurality of routes</u>; wherein the set of at least one routing protocol associated with a first one of the routing protocol computing entities is different from the set of at least one routing protocol associated with a second one of the routing protocol computing entities; <u>wherein the data storage medium of the first one of the routing protocol computing entities contains information on at least one route for which there is no information in the data storage medium of the second one of the routing protocol computing entities.</u>

Agarwal teaches methods and apparatus for synchronizing and propagating distributed routing databases for scalable router.

Agarwal discloses causing routing protocol computing entity to effect management of one or more peering sessions with remote routing devices according to the at least one routing protocol in the set associated with routing protocol computing entity **(See Figures 2, 3, and 8)**, the management of one or more peering sessions **(In Figure 2 peering session occurs between control cards A, B, C; In Figure 3 entity I with routing protocol A and entity IV with routing protocol B; See Column 7: 54-67 and Column 8:15-42)** comprising maintaining in the data storage medium information on a plurality of routes **(See Figure 4, the Control Cards 30A and 30B running protocols A and B and Route Table A and B)**; wherein the set of at least one routing protocol associated with a first one of the routing protocol computing entities is different from the set of at least one routing protocol associated with a second one of the routing protocol computing entities **(See Figures 2, 3, and 4 – all control cards are capable running different or same protocols)**

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Tsukakoshi's clustered router by causing routing protocol computing entity to effect management of one or more peering sessions with remote routing devices according to the at least one routing protocol in the set associated with routing protocol computing entity, the management of one or more peering sessions comprising maintaining in the data storage medium one or more route databases including routing data; wherein the set of at least one routing protocol associated with a

first one of the routing protocol computing entities is different from the set of at least one routing protocol associated with a second one of the routing protocol computing entities. The motivation being to provide a method for all distribution and synchronization of the routing database and forwarding table to a large number of entities within a distributed processor environment of a scalable router as stated in Agarwal in Column 3:19-22.

Tsukakoshi fails to disclose a router wherein the data storage medium of the first one of the routing protocol computing entities contains information on at least one route for which there is no information in the data storage medium of the second one of the routing protocol computing entities.

Watt teaches method for providing control information in a system using distributed communication routing.

Watt discloses router **(Figure's 2 router 22 a route computation engine)** the routing protocol computing entities contains information on at least one route for which there is no information in the data storage medium of the second one of the routing protocol computing entities. **(See Figures 2 and 3 - each forwarding table unique has route information. See Column 7:40-50)**

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Tsukakoshi's clustered router by a means wherein the data storage medium of the first one of the routing protocol computing entities contains information on at least one route for which there is no information in the data storage medium of the second one of the routing protocol computing entities. The motivation to

provide unique route info in each forwarding table is to minimize redundancy and enhance processing speed.

3B). Regarding **claim 65**, Tsukakoshi discloses a router device with route calculation units and forwarding units. The route calculation unit has a CPU and memory and has two or more routing protocol means to handle different types of protocols. Similarly the forwarding unit has a CPU as a forwarding processor and a memory unit. The router device's forwarding unit serves as the I/O unit and interfaces with external devices. The routing calculation unit constitutes the routing layer while the forwarding unit defines the I/O layer. The router device disclosed by Tsukakoshi is in effect a clustered router and appears to other external routers and communication terminals as a single network forwarding apparatus. **(See Column 3, Lines 62-67)**

Tsukakoshi discloses a router supporting multiple routing protocols **(See Column 3, Lines 18-20; Figure 1 element 15; Each routing calculation unit can handle two different routing protocols),** the router comprising:

a. an interface layer including a plurality of I/O controllers, each I/O controller implementing an I/O port; **(See Figure 1, element 18; Figure 4, element 18;Column 4, Lines 53-64; Each forwarding unit acts as an I/O controller determining what to transmit, re-transmit, accept and reject from the incoming and outgoing packet traffic. Each forwarding unit has to have at least one I/O interface or port to send to and receive packets from external routers like router 25 in Figure 1);**

b. a switching layer in communication with the interface layer for selectively establishing signal pathways between I/O ports; **(See Figure 1, element 13; Figure 4, element 46; Column 4, Line 40)**

c. a routing layer in communication with the interface layer, and the routing layer including a plurality of routing protocol computing entities, each routing protocol computing entity being associated with a set of at least one routing protocol and including: **(Tsukakoshi discloses each router entity 12 in Figure 1 contains two or more routing protocol means 15 as shown in Figure 1. See Column 3, Line 19. Further, Tsukakoshi shows that each router entity 12 in Figure 1 can contain more than two routing protocol means 15 which can easily be verified in Figure 3 that there are three running different protocols – protocol A, B, and C. See Column 2, Lines 37-38 and Column 14, Lines 13-20.)**

i. a CPU **(See element 41, Figure 4)**;

ii. a data storage medium in communication with the CPU **(See element 42, Figure 4)**;

iii. and storing program data executed by the CPU **(it is inherent for any processor designed to execute a series of procedures to store the instructions for executing the procedures in memory and in this case the program data has to be stored in the storage medium shown in Figure 4 as element 42)**;

Tsukakoshi fails to disclose causing routing protocol computing entity to effect management of one or more peering sessions with remote routing devices according to the at least one routing protocol in the set associated with routing protocol computing

entity, the management of one or more peering sessions comprising maintaining in the data storage medium information on a plurality of routes; wherein the set of at least one routing protocol associated with a first one of the routing protocol computing entities is different from the set of at least one routing protocol associated with a second one of the routing protocol computing entities; wherein the data storage medium of the first one of the routing protocol computing entities contains information on at least one route for which there is no information in the data storage medium of the second one of the routing protocol computing entities.

Agarwal discloses causing routing protocol computing entity to effect management of one or more peering sessions with remote routing devices according to the at least one routing protocol in the set associated with routing protocol computing entity **(See Figures 2, 3, and 8)**, the management of one or more peering sessions **(In Figure 2 peering session occurs between control cards A, B, C; In Figure 3 entity I with routing protocol A and entity IV with routing protocol B; See Column 7: 54-67 and Column 8:15-42)** comprising maintaining in the data storage medium information on a plurality of routes **(See Figure 4, the Control Cards 30A and 30B running protocols A and B and Route Table A and B)**; wherein the set of at least one routing protocol associated with a first one of the routing protocol computing entities is different from the set of at least one routing protocol associated with a second one of the routing protocol computing entities **(See Figures 2, 3, and 4 – all control cards are capable running different or same protocols)**

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Tsukakoshi's clustered router by causing routing protocol computing entity to effect management of one or more peering sessions with remote routing devices according to the at least one routing protocol in the set associated with routing protocol computing entity, the management of one or more peering sessions comprising maintaining in the data storage medium one or more route databases including routing data; wherein the set of at least one routing protocol associated with a first one of the routing protocol computing entities is different from the set of at least one routing protocol associated with a second one of the routing protocol computing entities. The motivation being to provide a method for all distribution and synchronization of the routing database and forwarding table to a large number of entities within a distributed processor environment of a scalable router as stated in Agarwal in Column 3:19-22.

Tsukakoshi fails to disclose wherein the data storage medium of a first one of the routing protocol computing entities contains information on at least one route for which there is no information in the data storage medium of a second one of the routing protocol computing entities; the router being operative for: merging routing data stored in the data storage medium of each of the routing protocol computing entities to produce merged routing data the merged routing data mapping that includes data regarding destinations and routes for the destinations; pruning the merged routing data to discard a first subset of the routes for the destinations and retain a second subset of the routes for the destinations; and transferring at least a portion of the merged routing data that

has been pruned to the data storage medium of each of said routing protocol computing entities.

Watt discloses wherein the data storage medium of a first one of the routing protocol computing entities contains information on at least one route for which there is no information in the data storage medium of a_second one of the routing protocol computing entities; the router being operative for: merging routing data stored in the data storage medium of each of the routing protocol computing entities to produce merged routing data the merged routing data mapping_that includes data regarding destinations and routes for the destinations; pruning the merged routing data to discard a first subset of the routes for the destinations and retain a second subset of the routes for the destinations; and transferring at least a portion of the merged routing data that has been pruned to the data storage medium of each of said routing protocol computing entities. **(See Figures 2 and 3 - each forwarding table unique has route information. See Columns 6:1-10, 6:19-30, 7:40-50 – data pruning occurs in the route computation engine 38 to create the different forwarding tables)**

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Tsukakoshi's clustered router by causing a means wherein the data storage medium of a first one of the routing protocol computing entities contains information on at least one route for which there is no information in the data storage medium of a_second one of the routing protocol computing entities; the router being operative for: merging routing data stored_in the data storage medium of each of the routing protocol computing entities to produce merged routing data the merged

routing data mapping that includes data regarding destinations and routes for the destinations; pruning the merged routing data to discard a first subset of the routes for the destinations and retain a second subset of the routes for the destinations; and transferring at least a portion of the merged routing data that has been pruned to the data storage medium of each of said routing protocol computing entities.

4. Regarding **claim 23**, Tsukakoshi discloses a router, comprising:

a. an interface layer including a plurality of I/0 controllers, each I/O controller implementing an I/O port (**See Figure 1, element 18; Figure 4, element 18;Column 4, Lines 53-64; Each forwarding unit acts as an I/O controller determining what to transmit, re-transmit, accept and reject from the incoming and outgoing packet traffic. Each forwarding unit has to have at least one I/O interface or port to send to and receive packets from external routers like router 25 in Figure 1)**;

b. a switching layer in communication with the interface layer for selectively establishing signal pathways between the I/O ports **(See Figure 4, element 46; Column 4, Line 40);**

C. a routing layer in communication with the interface layer, the routing layer including a plurality of routing protocol computing entities, each routing protocol computing entity being associated with a routing protocol **(See Column 4, Lines 39-52)** and including:

i. a CPU **(See element 41, Figure 4)**;

ii. a data storage medium in communication with the CPU **(See element 42, Figure 4)**; and storing program data for execution by the CPU **(it is inherent for any processor designed to execute a series of procedures to store the instructions**

for executing the procedures in memory and in this case the program data has to be stored in the storage medium shown in Figure 4 as element 42) to cause the routing protocol computing entity to effect management of one or more peering sessions with remote routing devices according to the routing protocol associated with the routing protocol computing entity **(Tsukakoshi discloses the clustered router is seen as a single entity by external devices like router 25 in Figure 1. Tsukakoshi further discloses that a communication or peering session can be established between the clustered router and any device like router 25 to continuously exchange packets. Each router unit in the clustered router can have a peering session with remote devices using the first and/or second protocol means. See also Column 2, Lines 11-15; Column 3, Lines 62-67; and Column 4, Lines 1-5.)**, the management of one or more peering sessions comprising maintaining in the data storage medium one or more route databases **(See Figure 1, elements 17; See Column 8, Lines 48-50 and Column 3, Lines 20-26; Tsukakoshi shows that each routing protocol means that runs a specific routing protocol during a peering session extracts specific network routing information and puts it in element 16 of Figure 1 and then creates a routing table)**.

Tsukakoshi fails to disclose causing routing protocol computing entity to effect management of one or more peering sessions with remote routing devices according to the at least one routing protocol in the set associated with routing protocol computing entity, the management of one or more peering sessions comprising maintaining in the data storage medium <u>information on a plurality of routes</u>; wherein the set of at least one

routing protocol associated with a first one of the routing protocol computing entities is different from the set of at least one routing protocol associated with a second one of the routing protocol computing entities; wherein the data storage medium of the first one of the routing protocol computing entities contains information on at least one route for which there is no information in the data storage medium of the second one of the routing protocol computing entities.

Agarwal discloses causing routing protocol computing entity to effect management of one or more peering sessions with remote routing devices according to the at least one routing protocol in the set associated with routing protocol computing entity **(See Figures 2, 3, and 8)**, the management of one or more peering sessions **(In Figure 2 peering session occurs between control cards A, B, C; In Figure 3 entity I with routing protocol A and entity IV with routing protocol B; See Column 7: 54-67 and Column 8:15-42)** comprising maintaining in the data storage medium information on a plurality of routes **(See Figure 4, the Control Cards 30A and 30B running protocols A and B and Route Table A and B)**; wherein the set of at least one routing protocol associated with a first one of the routing protocol computing entities is different from the set of at least one routing protocol associated with a second one of the routing protocol computing entities **(See Figures 2, 3, and 4 – all control cards are capable running different or same protocols)**

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Tsukakoshi's clustered router by causing routing protocol computing entity to effect management of one or more peering sessions with remote

routing devices according to the at least one routing protocol in the set associated with routing protocol computing entity, the management of one or more peering sessions comprising maintaining in the data storage medium one or more route databases including routing data; wherein the set of at least one routing protocol associated with a first one of the routing protocol computing entities is different from the set of at least one routing protocol associated with a second one of the routing protocol computing entities. The motivation being to provide a method for all distribution and synchronization of the routing database and forwarding table to a large number of entities within a distributed processor environment of a scalable router as stated in Agarwal in Column 3:19-22.

Tsukakoshi fails to disclose a router wherein the data storage medium of the first one of the routing protocol computing entities contains information on at least one route for which there is no information in the data storage medium of the second one of the routing protocol computing entities.

Watt discloses router **(Figure's 2 router 22 a route computation engine)** the routing protocol computing entities contains information on at least one route for which there is no information in the data storage medium of the second one of the routing protocol computing entities. **(See Figures 2 and 3 - each forwarding table unique has route information. See Column 7:40-50)**

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Tsukakoshi's clustered router by a means wherein the data storage medium of the first one of the routing protocol computing entities contains

information on at least one route for which there is no information in the data storage medium of the second one of the routing protocol computing entities. The motivation to provide unique route info in each forwarding table is to minimize redundancy and enhance processing speed.

5. Regarding **claim 2**, Tsukakoshi discloses a router wherein each routing protocol computing entity is operative to maintain simultaneously a plurality of peering sessions with remote routing devices. **(Column 2, Lines 11-15; Column 3, Lines 62-67; and Column 4, Lines 1-5)**

6. Regarding **claim 3**, Tsukakoshi discloses a router wherein each routing protocol computing entity is operative to exchange data with a remote routing device through the I/O interface layer during a peering session. **(Column 2, Lines 11-15; Column 3, Lines 62-67; and Column 4, Lines 1-5)**

7. Regarding **claim 4**, Tsukakoshi discloses a router, wherein the peering session includes a transfer of route information data from the router to a remote routing device. **(Column 2, Lines 11-15; Column 3, Lines 62-67; and Column 4, Lines 1-5)**

8. Regarding **claim 5**, Tsukakoshi discloses a router, wherein the peering session includes a transfer of route information data from the remote routing device to the router. **(Column 2, Lines 11-15; Column 3, Lines 62-67; and Column 4, Lines 1-5)**

9. Regarding **claim 6**, Tsukakoshi disclose a router, wherein the data storage medium **(element 42 in Figure 4)** of at least one of the plurality of routing protocol computing entities, stores a local routing table **(element 17, in Figure 1)** holding at least one inbound route database derived at least in part from route information data

transferred from a remote routing device **(element 25 in Figure 1)** to the router. **(Column 3, Lines 23-27;Column 4, Lines 44-52)**

10. Regarding **claim 7**, Tsukakoshi discloses a router wherein at least one of the plurality of routing protocol computing entities is operative to apply an inbound policy processing on the route information data transferred from a remote routing device during generation of at least one inbound route database. **(Column 3, Lines 23-27;Column 4, Lines 44-52; This is strictly a function of the routing protocol. This is implemented with a policy based routing protocol like BGP. Tsukakoshi's device can work with any routing protocol including BGP. Further Examiner takes Official Action on that a BGP is a policy based routing protocol.)**

11. Regarding **claim 8**, Tsukakoshi discloses a router wherein the data storage medium of at least one of the plurality of routing protocol computing entities stores a routing table that holds a best route database, at least one routing protocol computing entity being operative to apply an outbound policy processing on its best route database to generate at least one outbound route database, at least one routing protocol computing entity being operative to transfer route information data from the outbound route database to a remote routing device. **(Tsukakoshi Column 3, Lines 23-27;Column 4, Lines 44-52; This is strictly a function of the routing protocol. This is best implemented with a policy based routing protocol like BGP. Tsukakoshi's device can work with any routing protocol including BGP. Further Examiner takes Official Action on that a BGP is a policy based routing protocol.)**

12. Regarding **claim 9**, Tsukakoshi discloses, wherein the data storage medium **(element 42, Figure 4)** of each routing protocol computing entity stores a routing table **(element 17, Figure 1)** holding at least one inbound route database derived from route information data transferred from a remote routing device **(Tsukakoshi element 25, Figure 1)** to the router. **(Column 3, Lines 23-27, Column 4, Lines 44-52)**

13. Regarding **claim 10**, Tsukakoshi discloses a router, wherein each routing protocol computing entity is operative to apply an inbound policy processing on the route information data transferred from a remote routing device during generation of at least one inbound route database. **(Tsukakoshi Column 3, Lines 23-27;Column 4, Lines 44-52; This is strictly a function of the routing protocol. This is implemented with a policy based routing protocol like BGP. Tsukakoshi's device can work with any routing protocol including BGP. Further Examiner takes Official Action on that a BGP is a policy based routing protocol.)**

14. Regarding **claim 11**, Tsukakoshi discloses a router, wherein the routing table of the routing protocol computing entity holds a best route database, the routing protocol computing entity being operative to apply an outbound policy processing on the best route database to generate at least one outbound route database, each routing protocol computing entity being operative to transfer route information data from the outbound route database to a remote routing device. **(Tsukakoshi Column 3, Lines 23-27;Column 4, Lines 44-52; This is strictly a function of the routing protocol. This is best implemented with a policy based routing protocol like BGP. Tsukakoshi's device can work with any routing protocol including BGP.)**

15. With respect to **claims 8-11**, Tsukakoshi fails to expressly teach a router that has a routing protocol computing entity with its own local routing table.

Agarwal teaches a router that has a routing protocol computing entity with its own local routing table. **(See Figure 4, elements A and B)**

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Tsukakoshi's router by using a routing protocol computing entity with its own local routing table. The motivation being it further enhances modularity by isolating a given protocol to a specific processor and limits the failure recovery impact of the computing means in that only the local data associated with the computing entity is rebuilt.

16. Regarding **claim 12**, Tsukakoshi discloses, wherein the routing layer includes a control computing entity in data communicative relationship with each routing protocol computing entity (**See Column 4, Lines 39-52**), and the control computing entity includes:

a. a CPU **(See element 41 in Figure 4)**;

b. a data storage medium in communication with the CPU **(See element 42 in Figure 4)**;

C. a program data for execution by the CPU**(it is inherent for any processor designed to execute a series of procedures to store the instructions for the program executions in memory and in this case the program data has to be stored in the storage medium shown in Figure 4 as element 42);**

d. a master routing table stored in the data storage medium **(See element 17 in Figure 1; Column 4, Lines 50-52).**

17. Regarding **claim 13**, Tsukakoshi discloses a router, wherein the program data stored in the data storage medium of the control computing entity implements a routing table manager for managing the master routing table. **(It is inherent for any processor designed to execute a series of procedures to store the instructions for the program executions in memory and in this case the program data has to be stored in the storage medium shown in Figure 4 as element 42. The routing table has to be managed by the program data to determine when to read from and write to the table)**

18. Regarding **claim 14**, Tsukakoshi discloses a router, wherein each routing protocol computing entity is in communication with the control computing entity to transfer to the data storage medium of the control computing entity data from at least one inbound route database in the routing protocol computing entity. **(Column 3, Lines 18-27)**

19. Regarding **claim 15**, Tsukakoshi discloses a router, wherein the routing table manager is operative to apply a master policy processing on data received from the inbound route database in each routing protocol computing entity to generate the master routing table. **(Column 3, Lines 31-57; In Tsukakoshi's clustered router each routing table is a master routing table as each table gets updated with new route info using the NISP protocol. In case of failure the routing table located in the backup unit will be up to date when the unit is activated)**

20. Regarding **claim 16**, Tsukakoshi discloses a router; wherein the master policy processing includes merging the data in the inbound route databases from at least two of the routing protocol computing entities to produce merged inbound routing data. **(If the routing protocol is the same for the two entities then the data has to be merged and if the protocols are different the occurrence of a uniform merging is not necessarily true. This is also a function of policy based routing protocols like the BGP.)**

21. Regarding **claim 17**, Tsukakoshi discloses a router, wherein the merged inbound routing data includes information mapping destinations and routes to the destinations. **(Column 3, Lines 23-27; This is standard information contained in most routing data.)**

22. Regarding **claim 18**, Tsukakoshi discloses a router, wherein the merged inbound routing data includes a plurality of destinations and a set of routes associated with each destination of the plurality of destinations, the master policy processing includes discarding from each set of routes a plurality of routes and retaining only a subset of the set of routes. **(This is strictly a function of the routing protocol chosen. Tsukakoshi's clustered can accommodate any routing protocol. For instance BGP is a policy based routing protocol that selects best routes on the values of the BGP attributes and Examiner takes Official Action on this issue.)**

23. Regarding **claim 19,** Tsukakoshi discloses a router, wherein the control computing entity is operative to transfer to the data storage medium of the first one of the routing protocol computing entities at least a portion of the master routing data to

form the best route database in the data storage medium of the first routing protocol computing entities. **(See Column 3, Lines 18-20; Note that determining the best route is a function of the routing protocol like BGP and not the actual router)**

24. Regarding **claim 20**, Tsukakoshi discloses a router, wherein the control computing entity is operative to transfer to the data storage medium of a second one of the routing protocol computing entities at least a portion of the master routing data to form the best route database in the data storage medium of the second one of the routing protocol computing entities. **(See Column 3, Lines 18-20; Note that determining the best route is a function of the routing protocol like BGP and not the actual router.)**

25. Regarding **claim 21**, Tsukakoshi discloses a router, wherein each I/O controller includes a forwarding processor, when a data packet is received at the I/O controller, the forwarding processor determines an I/0 port of the interface layer through which the data packet is to be released, where the forwarding processor including a data storage medium holding a forwarding table, and the forwarding table includes data derived from the master routing table. **(Column 4, Lines 53-64)**

26. Regarding **claims 52 and 54**, Tsukakoshi discloses a router layer, comprising: a control computing entity in data communicative relationship with each routing protocol computing entity, the computing entity including:

i. a CPU**(See Tsukakoshi element 41, Figure 4)**;

ii. a data storage medium in communication with the CPU of the control computing entity**(See Tsukakoshi element 42, Figure 4)**;

iii. a master routing table stored in the data storage medium of the control computing entity, where the master routing table holding a master routing database derived at least in part from the inbound routing database of the first routing protocol computing entity and from the inbound routing database of the second routing protocol computing entity**(See Tsukakoshi element 17 in Figure 1; Column 4, Lines 50-52; Column 3, Lines 20-30 and Column 10, Lines 20-25)**;

iv. program data in the data storage medium of the control computing entity for execution by the CPU of the control computing entity to implement a main routing table manager to manage the master routing table **(it is inherent for any processor designed to execute a series of procedures to store the instructions for the program executions in memory and in this case the program data has to be stored in the storage medium shown in Figure 4 as element 42. The routing table has to be managed by the program data to determine when to read from and write to the table. However, Ichinohe teaches expressively a routing table manager in Figure 1 with elements 103 and 104.)**;

a backup computing entity, in data communicative relationship with the first and second routing protocol computing entities and with the control computing entity **(See Tsukakoshi Figure 18; Column 10, Lines 6-25),** and the backup computing entity includes:

i. a CPU**(See element 41, Figure 4)**;

ii. a data storage medium in communication with the CPU of the backup computing entity**(See element 42, Figure 4)**;

iii. program data in the data storage medium of the backup computing entity for execution by the CPU of the backup computing entity to implement a main routing table manager **(it is inherent for any processor designed to execute a series of procedures to store the instructions for the program executions in memory and in this case the program data has to be stored in the storage medium shown in Tsukakoshi Figure 4 as element 42. The routing table has to be managed by the program data to determine when to read from and write to the table)**;

iv. the backup computing entity being responsive to an operational failure of the control computing entity **(See Tsukakoshi Column 10, Lines 30-60)** to:

1. download the inbound routing databases from each routing protocol computing entities**(Tsukakoshi Column 10, Lines 48-53)**;

2. re-build the master routing database at least in part from the inbound routing databases downloaded from each routing protocol computing entities **(See Tsukakoshi Column 10, Lines 53-57)**.

27. Regarding **claims 53 and 55**, Tsukakoshi discloses a router layer, comprising: a control computing entity in data communicative relationship with each routing protocol computing entity, the computing entity including: **(See Tsukakoshi Column 4, Lines 39-52)**

i. a respective CPU **(See Tsukakoshi element 41, Figure 4)**;

ii. a respective data storage medium in communication with the CPU**(See Tsukakoshi element 42, Figure 4)**;

iii. a master routing table stored in the data storage medium of the control computing entity, where the master routing table holding a master routing database derived at least in part from the inbound routing database of the first routing protocol computing entity and from the inbound routing database of the second routing protocol computing entity**(See Tsukakoshi element 17 in Figure 1; Column 4, Lines 50-52; Column 3, Lines 20-30 and Column 10, Lines 20-25)**;

a backup computing entity, in data communicative relationship with the first and second routing protocol computing entities and with the control computing entity **(See Tsukakoshi Figure 18; Column 10, Lines 6-25),** and the backup computing entity includes:

i. a CPU**(See Tsukakoshi element 41, Figure 4)**;

ii. a data storage medium in communication with the CPU of the backup computing entity**(See Tsukakoshi element 42, Figure 4)**;

iii. the backup computing entity being responsive to an operational failure of the control computing entity **(See Tsukakoshi Column 10, Lines 30-60)** to:

1. transfer information from the master routing table to the data storage medium of the backup computing entity to re-build at least partially the local routing table of the first routing protocol computing entity**(See Column 10, Lines 33-36; Tsukakoshi discloses that the active-state**

route calculation unit sends update information to the backup-state route calculation unit. When the backup-state becomes active it is able to re-build the routing table as it has all the necessary updates till the last moment before the active unit failed. Also worth noting that in Tsukakoshi's system the active unit routing table and the backup unit routing table are always synchronized and up to date and can all be considered as the universal master routing tables.)

2. enable the program data in the data storage medium of the backup computing entity to effect management of one or more peering sessions with remote routing devices according to a first routing protocol. **(It has already been established by Tsukakoshi that the clustered router can have a peering session with remote devices using the first and/or second protocol means. The backup computing entity will not establish any peering session when it is on stand by mode as it is a spare entity. However, once the backup unit becomes an active computing entity it can readily establish a peering session with external devices using steps taught by Tsukakoshi. See also Column 2, Lines 11-15; Column 3, Lines 62-67; Column 4, Lines 1-5; Column 10, Lines 6-25)**;

28. With respect to **claims 52-55**, Tsukakoshi fails to expressly teach a router wherein the data storage medium of each routing protocol computing entity holds a local routing table storing an inbound routing database derived from route information data

transferred from a remote routing device during a peering session managed by the routing protocol computing entity.

Agarwal teaches wherein the data storage medium of each routing protocol computing entity holds a local routing table storing an inbound routing database derived from route information data transferred from a remote routing device during a peering session managed by the routing protocol computing entity. **(See Figure 4, elements A and B)**

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Tsukakoshi's router by using a routing protocol computing entity with its own local routing table. The motivation being it further enhances modularity by isolating a given protocol to a specific processor and limits the failure recovery impact of the computing means in that only the local data associated with the computing entity is rebuilt.

29. Regarding **claims 22, 50 and 51**, Tsukakoshi discloses a router; wherein the subset of protocols associated with the first routing protocol computing entity is different from the subset of protocols associated with the second routing protocol and further discloses any protocol can be used and mentions the RIP protocol as an example. **(Column 3, Lines 18-23; Column 6, Lines 1-10; Tsukakoshi's router is not limited by the type of the routing protocol chosen.)**

Tsukakoshi, however, fails to expressly disclose that routing protocols can be OSPF and BGP. Further, Tsukakoshi fails to expressly disclose that only one routing

protocol can run on a protocol computing entity. Even further, Tsukakoshi's fails to disclose two protocol computing entities can have mutually exclusive sets of protocols.

Agarwal discloses that routing protocols can be OSPF and BGP **(See Column 7:21)**. Agarwal discloses that only one routing protocol running on a protocol computing entity **(See Figure 2 and Column 8:1-15)**. Agarwal discloses two protocol computing entities can have mutually exclusive sets of protocols. **(See Column 54, Lines 4-7 and 30-43 and Column 5, Lines 20-27. See also in Figures 1, 10, 12, and 14, processors 113, 114, 203, and 204)**

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Tsukakoshi's clustered router to use OSPF and BGP as routing protocols. The motivation being it provides peering sessions with networks based on these protocols and such sessions with these networks are beneficiary as theses networks running OSPF and BGP protocols are widely deployed and make up part of what is known as the Internet.

30. Regarding **claims 24 and 30** Tsukakoshi discloses a router, wherein the first routing protocol and the second routing protocol are distance vector protocols. **(Column 3, Lines 18-23; Column 6, Lines 1-10; Tsukakoshi's router is not limited by the type of the routing protocol chosen.)**

31. Regarding **claim 25**, Tsukakoshi discloses a router, wherein the first routing protocol and the second routing protocol are link state protocols. **(Column 3, Lines 18-23; Column 6, Lines 1-10; Tsukakoshi's router is not limited by the type of the routing protocol chosen.)**

32. Regarding **claims 26-29** Tsukakoshi discloses all aspects of the claimed invention as set forth in the rejection of claim 24 but does not disclose how at least one of the remote devices forming a peering session with the first routing protocol computing entity can be prevented from forming any peering session with the second routing protocol entity.

Agarwal discloses wherein the first routing protocol computing entity is capable of establishing peering sessions with a first set of remote routing devices, the second routing protocol computing entity is capable of establishing peering sessions with a second set of remote routing devices, the first set of remote routing devices excluding at least one routing device that belongs to the second set of routing devices, wherein the first set of remote routing devices excludes any remote routing device from the second set. **(See Figures 2, 3, and 6 and Column 8:16-42. Agarwal router uses registration process to exclude routers from peering session. See Column 10:20-35. Agarwal routing protocol computing entities run different routing protocols including BGP as stated in Column 7:20. Examiner takes Official Notice that authentication and filtering can be implemented at the routing protocol level using features of BGP and DDOS squelch protocols as detailed in Anderson et al (US Pub. No. 2003/0014665))**

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Tsukakoshi's router wherein the first routing protocol computing entity is capable of establishing peering sessions with a first set of remote routing devices, the second routing protocol computing entity is capable of establishing

peering sessions with a second set of remote routing devices, the first set of remote routing devices excluding at least one routing device that belongs to the second set of routing devices. The motivation is to provide authentication means to identify routers that are registered to receive routing data in order to provide a method for all distribution and synchronization of the routing database and forwarding table to a large number of entities within a distributed processor environment of a scalable router as stated in Agarwal in Column 3:19-22.

33. Regarding **claim 59**, Tsukakoshi fails to disclose a router, wherein the routing data stored in the data storage medium of each of the routing protocol computing entities to produce merged routing data and the transferring comprises transferring the at least a portion of the merged routing data to the data storage medium of each of the routing protocol computing entities.

Agarwal discloses a router, the routing data stored in the data storage medium of each of the routing protocol computing entities to produce merged routing data and the transferring comprises transferring the at least a portion of the merged routing data to the data storage medium of each of the routing protocol computing entities. **(See Column 6:46-67 and Column 7:1-5)**

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Tsukakoshi's clustered router wherein the transferring comprises transferring the at least a portion of the merged routing data to the data storage medium of each of the routing protocol computing entities. The motivation being to provide a method for all distribution and synchronization of the routing

database and forwarding table to a large number of entities within a distributed processor environment of a scalable router as stated in Agarwal in Column 3:19-22.

34. Regarding **claim 60**, Tsukakoshi fails to disclose a router wherein the merged routing data includes data regarding destinations and routes for the destinations, including, for each of at least one of the destinations, a plurality of routes for that destination.

Agarwal discloses disclose a router wherein the merged routing data includes data regarding destinations and routes for the destinations, including, for each of at least one of the destinations, a plurality of routes for that destination. **(See Column 6:40-45)**

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Tsukakoshi's clustered router wherein the merged routing data includes data regarding destinations and routes for the destinations, including, for each of at least one of the destinations, a plurality of routes for that destination. The motivation being it eases routing incoming packets for the I/O controller or forwarding unit, which is the Line Card in Agarwal's system.

35. Regarding **claim 61**, Tsukakoshi fails to disclose a router, wherein the router is operative for, prior to the transferring, pruning the merged routing data by retaining, for each destination, at most a set number of routes for that destination.

Agarwal discloses a router, wherein the router is operative for, prior to the transferring, pruning the merged routing data by retaining, for each destination, at most a set number of routes for that destination. **(See Column 6:64-67)**

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Tsukakoshi's clustered router wherein the router is operative for, prior to the transferring, pruning the merged routing data by retaining, for each destination, at most a set number of routes for that destination. The motivation being in order to save space of storing data and time for accessing data only a necessary subset of data is forwarded to the forwarding tables.

36. Regarding **claim 62**, Tsukakoshi fails to disclose a router wherein the pruning comprises pruning the merged routing data based on a preference attribute associated with each of the routes.

Agarwal discloses a router wherein the pruning comprises pruning the merged routing data based on a preference attribute associated with each of the routes. **(See Column 6:46-67 and Column 7:1-5)**

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Tsukakoshi's clustered router wherein the pruning comprises pruning the merged routing data based on a preference attribute associated with each of the routes. The motivation being in order to save space of storing data and time for accessing data only a necessary subset of data is forwarded to the forwarding tables.

37. Regarding **claims 63 and 67**, Tsukakoshi fails to disclose a router wherein routing layer includes a control computing entity in data communicative relationship with each of the routing protocol computing entities, the control computing entity including: a CPU; and a data storage medium in communication with the CPU of the control

computing entity and storing program data for execution by the CPU of the control computing entity to cause said control computing entity to effect the merging and the transferring.

Agarwal discloses a router wherein routing layer includes a control computing entity in data communicative relationship with each of the routing protocol computing entities, the control computing entity including: a CPU **(See Figures 1 A, B, C; and Column 7:17-25 all routing protocol computing entities, L1s are processor based. Any L1 registered as a server and client with all L1s can be considered a control computing entity as illustrated in the transaction in Column 8:16-41)**
a data storage medium **(inherent for the system shown in Figure 4 having a routing table)** in communication with the CPU of the control computing entity and storing program data for execution by the CPU of the control computing entity to cause the control computing entity to effect the merging and the transferring **(See Column 6:46-67)**

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Tsukakoshi's clustered router wherein routing layer includes a control computing entity in data communicative relationship with each of the routing protocol computing entities, the control computing entity including: a CPU; and a data storage medium in communication with the CPU of the control computing entity and storing program data for execution by the CPU of the control computing entity to cause said control computing entity to effect the merging and the transferring. The motivation being to provide a method for all distribution and synchronization of the

routing database and forwarding table to a large number of entities within a distributed processor environment of a scalable router as stated in Agarwal in Column 3:19-22.

38. Regarding **claim 68**, the combination of Tsukakoshi, Agarwal, and Watt disclose a router wherein the set of at least one routing protocol associated with the first one of the routing protocol computing entities is different from the set of at least one routing protocol associated with the second one of the routing protocol computing entities. **(See Tsukakoshi Figure 3)**

39. Regarding **claim 69**, the combination of Tsukakoshi, Agarwal, and Watt disclose a router wherein the set of at least one routing protocol associated with the first one of the routing protocol computing entities is identical to the set of at least one routing protocol associated with the second one of the routing protocol computing entities.**(See Agarwal Figure 3)**

Response to Arguments

40. Applicant's arguments with respect to all independent claims have been considered but are moot in view of the new ground(s) of rejection.

41. As a follow up to the phone interview conducted 10/19/07, Examiner at this point conclusively agrees that none of the prior cited references can teach the newly amended limitations of the independent claims. However, after conducting a new search Examiner has determined that Watt essentially teaches the pruning functionalities of the Applicant's Master Database Engine being imported to the local route calculating engines of each router. Certainly what the Applicant teaches at a

central level is now done in a distributed manner and can be combined with the other references because both Tsukakoshi and Agarwal teach distributed systems. Nothing in the Remarks indicate why such a logic cannot be applied in the rejections of the pending claims. Hence, the rejection has been made final.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The following US and European Patent Application describes a multiple virtual router with a controlling entity:

European Patent Application (EP 0 926 859 A2) to Scott et al

US Pub. No. (2002/0141378) to Bayes et al

The following US Patent describes policy management:

US Patent (5, 889, 953) to Thebaut et al.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Habte Mered whose telephone number is 571 272 6046. The examiner can normally be reached on Monday to Friday 9:30AM to 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Doris H. To can be reached on 571 272 7629. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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